AHP Methodology
As a Decision Making Tool when Selecting and Hiring Teachers at Higher Education Institutions - Private Business Schools

Summary

The academic ranks of teachers at private business schools are: professional assistant, lecturer, senior lecturer and professor. Candidates who apply to job express great diversity in academic degree, scientific, teaching and business experience. In making choices the AHP (Analytic Hierarchy Process) methodology has been chosen since it breaks complex issues into a multitude of simpler questions that are more easily comprehended and addressed. The main criteria have been divided into quantitative (the costs of salaries and the school fees) and qualitative (scientific, teaching and professional business experience) criteria. A preference weight for each alternative is defined in accordance with the Croatian standards.

1. Introduction

By opening of a large number of new private and public colleges and starting with an implementation of the Bologna process, it is estimated that Croatia will lack about 4,000 teachers at higher education institutions. In a small country (with 4.5 mil. inhabitants, only 10 % of population has a college and academic degree and there is a remarkable "brain drain") which has set a fairly high goal "to become the leading country of knowledge in South-East Europe" – the shortage of academic teachers may present the major limiting factor. Therefore, it might be expected that due to the high demand on the market and the long-lasting underrating of poorly paid academic teachers, the trend of sizable salary increase shall appear soon. On the other hand, the imposed obligation of continuous internal and external evaluations[1] shall increase the teaching quality standards which in turn shall reduce the number of students in groups and teaching loads but increase expenditures related to teachers' permanent education.

To follow suit of the German professional schools of higher education (*Fachhochschule*) (Havelka, 2003) the optimal teacher's profile would be a Philosophy Doctor (provided that he mastered the use of scientific methods), with a minimum five-years successful practical experience and the completed pedagogical education; half of the time he shall actively teach, and the other half of the time he shall engage in applied research for economy purposes. In Croatian terms, it might be said that this is an ideal to be pursued. In accordance with the current Croatian Act on Scientific Activity and Higher Education (NN no. 123/03, Article 98) the academic ranks of teachers at college institutions are as follows: professional assistant, lecturer, senior lecturer and professor. In reality, at most colleges, part-time university professors without sufficient practical experience or professionals with plenty of practical experience (professional assistants), yet without any pedagogical education and appropriate academic - teaching rank are engaged in teaching.

In planning of human resources, the following dilemma is encountered: (1) whether to employ already 'made men' suitable for the election into appropriate academic-teaching rank, but in that case they should receive higher salary or (2) to employ professional assistants with lower pay, but in that case one has to invest more into their academic degrees, pedagogical educational and academic work in order to acquire predispositions for election into appropriate academic rank. In the latter case, the major problem at private colleges is financing of scholarly work. Namely private colleges and business schools are not accredited as scientific institutions so they have no reach to funds provided for scientific research projects by the Croatian Ministry of Science, Education and Sports. On the other hand, due to the high teaching loads, there is almost no major work on the economy-based projects, and finally financing of any research work cannot be transferred onto the already rather high college fees (tuition fees).

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[1] Examples of international evaluations and re-evaluations at the Finish universities and polytechnic schools are an indication of future trends for which we have to prepare ourselves in time, if we wish to survive on the open European market of business schools (where fighting for students shall start soon). These quality criteria are rather high, not only for the teaching process, but also for the fulfillment of all three basic constitutional university tasks: (1) scientific research, (2) teaching based on scientific research and (3) a role in development of a local community. The difference between universities and polytechnic schools mainly consists in the applied scientific research and economy-based projects, so that some people suggest that polytechnic schools should be renamed into the *faculties of applied sciences*. (Data from the VERN benchmarking at the Vaasa University and of polytechnic schools in Vaasa and Kauhava within the TEMPUS Chentre project, in April 2004.). This guiding principle on an equal dignity and social role of colleges (polytechnic schools) and universities can be found in Pratt et al., (2004) specified in Bibliography.

Many companies and business schools permanently invite people at their web pages to send them their CVs (Curriculum vitae – CV). Then, the offers and CVs are stored in the CV-database, and when an expert of certain type is needed, the stored database shall be 'filtered' first. The complex environment, all the more complicated internal processes and procedures, the growing number of *stakeholder*s (interest-influential groups) which have to be taken into account, all the more complex goals to be pursued..., result in the setting up priorities among goals and in consideration of the increasing number of possible alternatives. Multi-criteria decision-making is a procedure for a selection of one among many possible alternative decisions. The key elements of such decision-making are **goals** pursued by the decision, **alternatives** to be selected and **criteria** used in the selection. The criteria are attributes used to describe alternatives and their purpose is to directly or indirectly provide information on the extent to which certain alternative is able to secure the desired goals, so that in the end, a rank list of alternatives shall be made and shall be used for making a final decision (Hunjak, 2005).

Analytical Hierarchy Process or AHP Method (Saaty, 1980) belongs to the most popular and recently most utilized methods for a multi-criteria decision-making. The solving of complex problems in a decision-making process with this method is based on their decomposition into a hierarchy structure; their elements are goals, criteria (sub-criteria) and alternatives. Another very important component of the method is a mathematical model used for the calculation of priority (weights) elements which are equally leveled in terms of a hierarchy structure. The third reason for a large popularity of this method is good software ExpertChoice which might be obtained free-of-charge for two weeks. The AHP method became widely applied in distinctive areas of decision support – from prioritizing suppliers of raw-material, forests management, and evaluation of the most favorable financing sources for small entrepreneurs and all the way to benchmarking quality and to state supervision of banks. Only in Emerald base, there are more than 200 articles about the AHP ethod and about human resources management. Its application ranges from analysis of prioritizing stakeholders (Jackson, 2001), workforce selection in employment, data utilization from the CV-database, performance measurement of "white collar" workforce who work only on basis of knowledge and creativity (Takala et al., 2006), management of knowledge and social networks analysis in a company (Liebowitz, 2005), defining priorities in library acquisition (Uzorka and Ijatuyi, 2005) and all the way to election into academic ranks and Excellence Awards for the best university professors (Badri and Mohamed, 2004).

2. Selection of methods and their description

In dealing with this problem there are large possibilities to apply the quantitative methods in decision-making for managers. One of them would be an implementation of the TOPSIS method *(Technique for Order Preference by Similarity to Ideal Solution)* (Hunjak, 2005a). It could be used to establish deviations of candidates from the positive and negative teacher's model. This might turn out to be very useful in public higher education schools, financed by the state. However, in private schools, besides excellent quality, expenditures count, too. Therefore a multi-criteria decision-making and implementation of the AHP Method was chosen – *Analytic Hierarchy Process* in workforce selection and evaluation. The method is quite simple; it may be widely applied, it equally evaluates work experience and knowledge

as well as numerical data. For mathematical processing the program ExpertChoice[2] may be used. It is possible to work with 5-7 criteria at the same time. The data ought to be internally consistent, i.e. the defined criteria have to be applied always, and thus they will produce the consistency ratio (Overall inconsistency or Inconsistency index – Incon).

2.1. AHP - Analytic Hierarchy Process

The application of this method may be explained in 4 steps (Saaty, 1980, according Hunjak, 2005 and Hunjak & Jakovčević, 2003):

1. Development of a hierarchy model for decision-support, with the goal on top, with criteria and sub-criteria at lower levels and with alternatives at the bottom (Fig 1)

Fig 1 AHP model with goals, criteria and alternatives
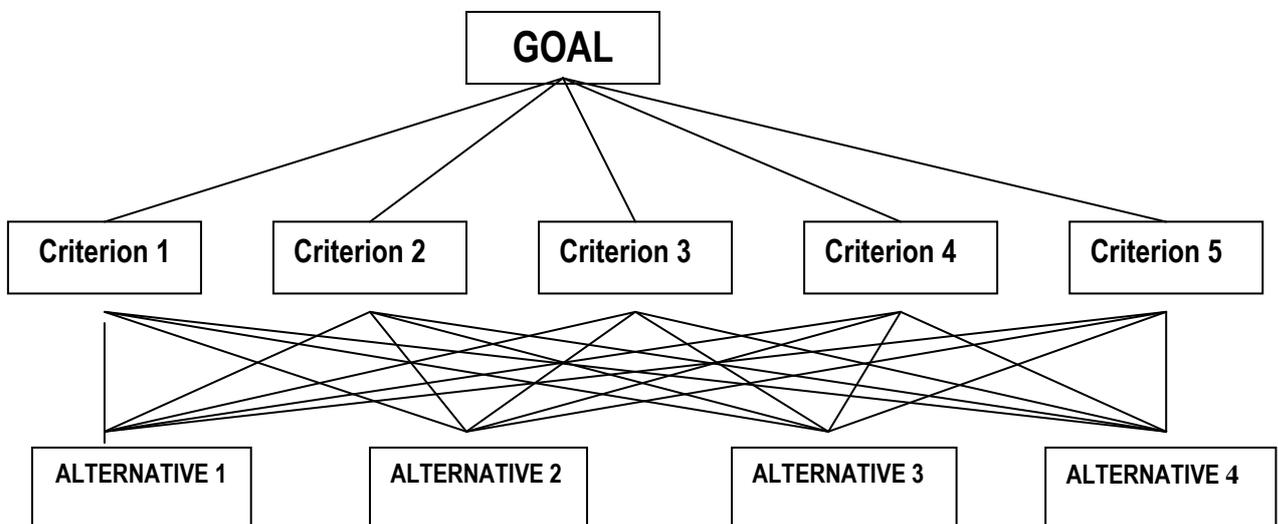
2. At every level of hierarchy structures, the elements of the structure are compared to one another in pairs, and decision-makers specify their preference by means of the corresponding scale with 5 grades and 4 intermediate values of the verbally described intensities and of numerical values, from 1 to 9 Saaty scale for benchmarking of relative importance of elements in AHP models was presented in Table 1.

3. From the assessment of the relatively ranked single elements, local priorities (weights) of criteria, sub-criteria and alternatives are derived, by means of appropriate mathematics; then, they are synthesized into total priorities of alternatives.

4. A sensitivity analysis shall be performed.

The inconsistency ratio (Overall inconsistency) is calculated for each set of judgments. When the inconsistency ratio is zero we have complete consistency; when it is greater than zero there is some inconsistency. If it is 0.10 or less the consistency is generally considered

tolerable. If it is more than 0.10 (and certainly if it is as high as 0.20) then a re-examination of our judgments is probably in order. ExpertChoice provides a measure of our logical rationality, but does not force us to be consistent.

Table 1 Saaty's scale

INTENSITY OF IMPORTANCE	DEFINITION	EXPLANATION
1	EQUAL importance	Two elements contribute <u>equally</u> to the objective
3	MODERATE importance	Experience and judgment <u>slightly favor</u> one element over another
5	STRONG importance	Experience and judgment <u>strongly favor</u> one element over another
7	VERY STRONG importance	One element <u>is favored very strongly</u> over another, its <u>dominance is demonstrated in practice</u>
9	EXTREME importance	The evidence favoring one element over another <u>is of the highest possible order of affirmation</u>.
2,4,6,8	Intermediate values	

2.2 AHP Model for criteria comparison in selection of teachers

The AHP method basic model includes for the requirements of this research the goal, 5 selection criteria divided into 2 groups, and 4 alternatives (Fig. 2 and Table 2).

Goal: In selection of teachers it is necessary to evaluate the importance of each and every criterion in order to obtain an optimal combination of total expenditures and quality of college teachers.

Alternatives:
a) PROFESSIONAL ASSISTANT – a university graduate, without published scientific papers. Since he intends to become elected into the academic rank – lecturer, he is obliged to take exams in pedagogical subjects, enroll a postgraduate study and publish scientific papers. Although the Croatian law suggests that research assistants at higher education institutions should be recruited among novices, yet, when it comes to vocational (professional) higher education institutions such as colleges and polytechnics, mainly people with significant practical experience are employed as professional assistants.
b) LECTURER – a university graduate, with an academic rank, teaching experience and published scientific papers, need not have practical experience. For the election into the next academic rank he has to get a master's degree and to publish scientific papers.
c) SENIOR LECTURER – Master of Science (M. Sc), with an academic rank, teaching experience and published scientific papers, need not have practical experience. For the election into the next academic rank – professor, he has to get a Philosophy Doctor's degree and to publish scientific papers.
d) PROFESSOR – a Philosophy Doctor (PhD), with an academic rank, teaching experience and published scientific papers, need not have practical experience. For the election into tenure (long-lasting contract) he has to regularly publish scientific papers.

Criteria: Among various criteria affecting the quality of college teachers we have confined ourselves to 5 most common criteria used in Croatia for deciding on strategic management in hiring of college teachers. The criteria may be divided into quantitative and qualitative criteria (Fig. 2).
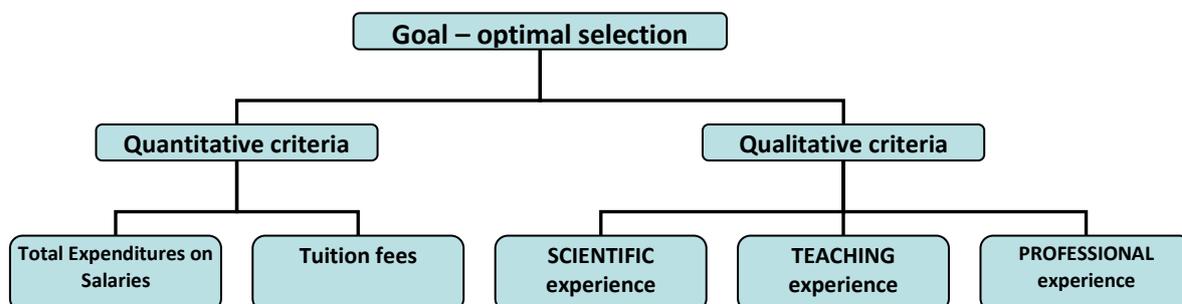
Fig 2 AHP model in selection of teachers

Table 2 shows the ratios of current decision making practice in Croatia according to authors' experience and assessment. A specific feature of private colleges versus public colleges is rendering higher relative significance to expenditures criteria. Relative significance of criteria should be equal for scientific, teaching and practical experience. The grade of experience is rated by grades from 1 to 5 (1 – no experience, 5 – very rich experience) per criteria specified in the Table 5. Computation of salaries and tuition fees will be explained in section 2.2.1 Quantitative criteria.

Table 2 Table for deciding on the selection of teachers for higher education institutions – private business schools with alternatives and assumed relative significance of attributes

ALTERNATIVES	CRITERIA AND THEIR RELATIVE SIGNIFICANCE				
	Total salaries	Tuition fees	Scientific experience	Teaching experience	Professional experience
	0.30	0.20	0.17	0.17	0.17
Professional assistant	1,800 €	14,340 €	1 - 5	1 - 5	1 - 5
Lecturer	2,358 €	14,340 €	1 - 5	1 - 5	1 - 5
Senior lecturer	2,772 €	10,100 €	1 - 5	1 - 5	1 - 5
Professor	3,330 €	0	1 - 5	1 - 5	1 - 5

2.2.1 Quantitative criteria

The quantitative criteria include mostly total expenditure for salaries and tuition fees for master's and doctor's degrees. This research shall not include basic pedagogical education costs and additional costs for interactive teaching course. Namely, this shall not account for

any difference because, nowadays, even university teachers have to attend the basic pedagogical education courses. Over the last twenty years they were not obliged by the law to take exams in pedagogical subjects as were obliged by the teachers of primary and secondary schools[3]. It shall also not include expenditure of scientific research works and of participation at conferences, since they are equally represented in all teachers' categories.[4]

(1) Total expenditures on salaries

In accordance with the "Proposal" submitted by the University Council (2002) between the lowest income of higher lab technicians and the Full Professor elected into a tenure at the state universities would be 1:3.05, and for the Professor at public college 1:2.90. Because there are no lab technicians at business schools, for the requirements of this paper, the coefficients were recalculated, so that the lowest salary of professional assistant is specified by a coefficient 1; thus a ratio between a professional assistant and a full professor elected into a tenured rank is 1:2.23. Since salaries at private business schools are strictly confidential, and teaching loads at such schools are still negotiated, we will take a roughly defined correct net salary base for research assistant at Croatian public universities, who is engaged in immediate teaching about 12 hours a week; it amounted to 1,000 €. The gross income is derived from a net salary multiplied by a 1.6 coefficient; whereas total expenditure for an employer with all pertaining taxes and fees "from salary and on salary" is computed by multiplication of the net monthly salary with 1.8 coefficients.

Table 3 Work complexity coefficients proposed by the University Council, recalculated coefficients for private colleges and pertaining monthly net salaries

Academic rank	Proposed work complexity coefficients	Corrected college teachers coefficients	Net salary, for full-time college teacher	Total employer's expenditure
1. Professional assistant	1.30	1.00	1,000 €	1,800 €
2. Assistant	1.45	1.12	1,120 €	2,016 €
3. Lecturer	1.70	1.31	1,310 €	2,358 €
4. Senior lecturer	2.00	1.54	1,540 €	2,772 €
5. Professor **- first election**	2.40	1.85	1,850 €	3,330 €
6. Professor **- tenure (long-lasting contract)**	2.90	2.23	2,230 €	4,014 €

(2) Tuition fees for master's degree and doctorate

Teachers at private higher education institutions are subject to elections into academic ranks and are obliged to continue their education at postgraduate and doctoral studies, but the Ministry of Education, Science and Sports is not in the position to bear their tuition fees.

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[3] Per authors' information, the last seminars for a mandatory pedagogical education of the university teachers in Zagreb have been held at the end of 1970-ties at the Faculty of Arts. Fully aware of this essential shortcoming, there is a growing number of younger teachers over the last four years who registered on their own for seminars "Active Learning for Critical Thinking" organized by the Forum for Freedom in Education (see www.fso.hr)

[4] Slovenian experience indicates that in order to motivate and develop scientists-researchers it is indispensable to provide them active participation on all conferences related to their fields of interest, that are held in the country and at least once a year at an international conference abroad. (oral statement made by Prof. Maja Ravnikar, Ph.D. , Principal at the Institute of Biology, University of Ljubljana, in November 1994, during implementation of the state strategy "2000 young scientists by the year 2000")

Therefore, the majority of college teachers work and in their free time they attend postgraduate master and doctoral studies at various Croatian faculties. By calculating the average prices of tuition fees for postgraduate master and doctoral studies we use the sample of 5 most popular faculties among business professors: Faculty of Economy, Zagreb; Faculty of Economy, Osijek; Faculty of Tourism and Hotel's Management, Opatija; Faculty of Organization and Informatics, Varaždin and University of Zadar – Department of Information and Communication Studies. An average tuition fee for different postgraduate master and doctorate studies are taken from their web sites and finally their mean values computed. Because new qualifications for election into academic ranks and salary coefficients for the candidates who will complete their study according Bologna process are not known yet, prices were taken for scientific master and doctoral studies in progress started in academic year 2005/06.

Table 4 **Average tuition fees for master and doctor degrees on faculties of economy and business (and some related faculties) in Croatia in ac. year 2005/06.**

	MASTER DEGREE	**DOCTORATE DEGREE**
AVERAGE TUITION FEE	= 4,240.00 €	= 10,100.00 €

2.2.2. Qualitative criteria

The qualitative criteria include: experience in science, i.e. scientific research, teaching experience and professional experience, i.e. practical working experience in business sector**.** The grade of experience is rated by grades from 1 to 5 (1 – no experience, 5 – very rich experience). Table 5 shows attributes for grading intensities of qualitative criteria according to the experience and estimation of authors. Although election criteria for college teachers include other possibilities, such as applied business research and projects, patents, published articles in business magazines etc., committee members are still mostly university professors (with PhD academic grade) preferring published scientific articles and reviewed textbooks.

This part of analysis should be worked out very carefully and consistently because it is very important in pair comparisons and by determining local priorities which can significantly influence final results.

Table 5 Attributes for grading intensities of qualitative criteria

	Intensities	Definitions
	SCIENTIFIC EXPERIENCE	
1	**No experience**	No experience in scientific research
2	**Some experience**	No published papers, but the candidate participated in research projects
3	**Moderate**	The candidate published papers in the relevant scientific journals, but has no experience in research projects
4	**Large**	The candidate published papers in relevant scientific journals and is experienced in research projects
5	**Very large**	The candidate published papers in relevant scientific journals and is experienced as a project leader
	TEACHING EXPERIENCE	
1	**No experience**	No teaching experience and no pedagogical education
2	**Some experience**	Basic pedagogical education, less than 3 years teaching experience
3	**Moderate**	Basic pedagogical education and more than 3 years of teaching experience
4	**Large**	Basic pedagogical education, more than 3 years of teaching experience and additional interactive teaching course
5	**Very large**	Election into the teaching or academic rank, mentor
	PROFESSIONAL BUSINESS EXPERIENCE	
1	**No experience**	No professional business experience
2	**Some experience**	Less than 5 years of professional business experience
3	**Moderate**	More than 5 years of professional business experience, whereof 1-3 years on the work related to the relevant field of instruction
4	**Large**	5 -10 years of professional business experience, whereof 3 - 5 years on the work related to the relevant field of instruction
5	**Very large**	More than 10 years of professional business experience and more than 5 years on the work related to the relevant field of instruction

3. Analysis by the AHP Method

After the goals, alternatives and criteria with attributes for their grading are well defined AHP Method analysis will be performed with ExpertChoice program in 6 steps.

STEP 1 – Matrix of preferences (weight) ratio computed based on comparison of criteria priorities, in pairs per Saaty scale (Table 2).
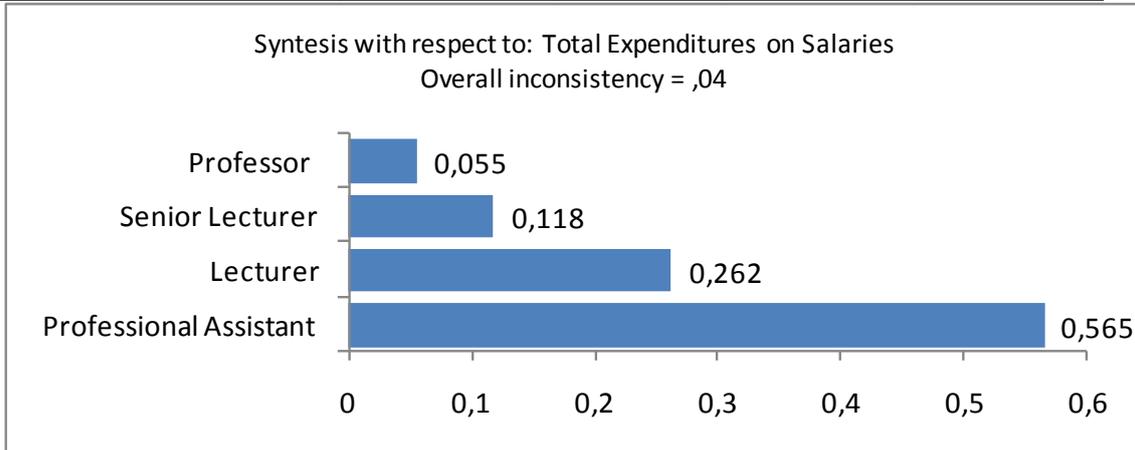
Table 6 Criteria weight ratio

	Total salary expenditures	Tuition fee expenditures	Scientific experience	Teaching experience	Professional experience
Total salary expenditures	1	5	7	7	7
Tuition fee expenditures	1/5	1	5	5	5
Scientific experience	1/7	1/5	1	1	1
Teaching experience	1/7	1/5	1	1	1
Practical experience	1/7	1/5	1	1	1

STEP 2- (matrix standardization, so that first columns are summarized and every element is divided by the sum of an appertaining column) and **STEP 3 -** (weights, i.e. priorities, are computed as average element values of single ranks) shall be processed further on by the program ExpertChoice

STEP 4 - By every default criterion, by comparison in pairs to estimate alternative priorities ratios

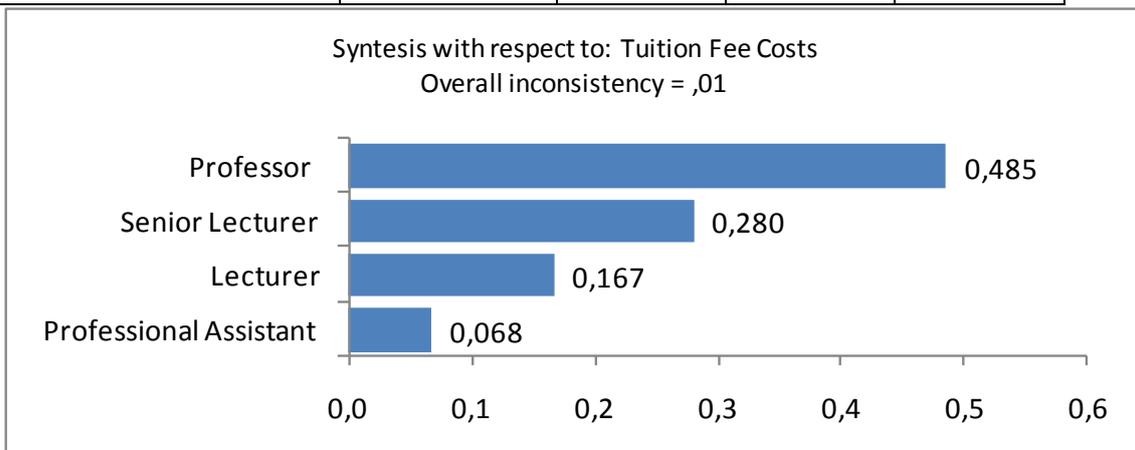**Fig 3 Alternative priorities ratios by a criterion TOTAL EXPENDITURES ON SALARY**

Alternative	Professional assistant	Lecturer	Senior lecturer	Professor
Professional assistant	1	3	5	7
Lecturer	1/3	1	3	5
Senior lecturer	1/5	1/3	1	3
Professor	1/7	1/5	1/3	1

Syntesis with respect to: Total Expenditures on Salaries
Overall inconsistency = ,04

Professor 0,055
Senior Lecturer 0,118
Lecturer 0,262
Professional Assistant 0,565

According to the criterion total expenditures on salaries it is obviously how much professor is more expensive than professional assistant.

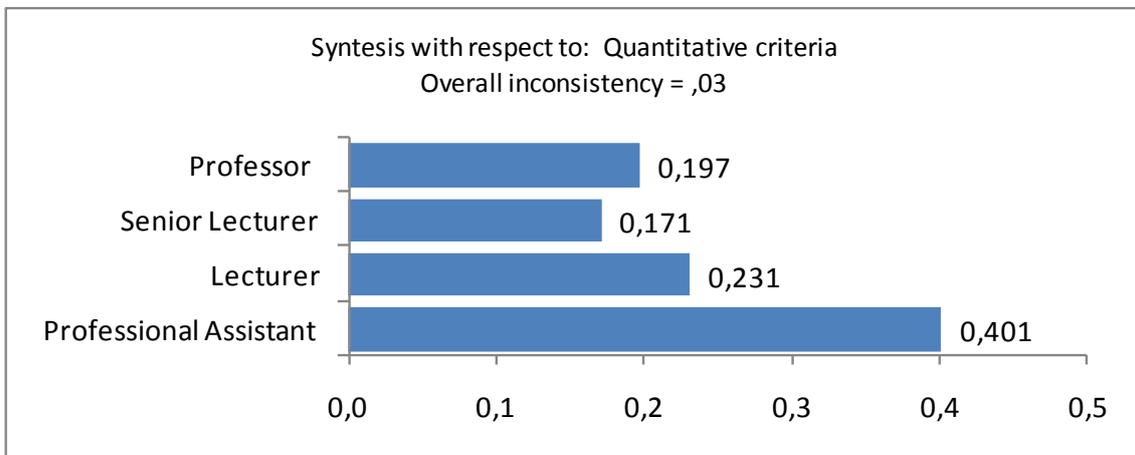**Fig 4 Alternative priorities by the TUITION FEE COSTS criterion**

Alternatives	Professional assistant	Lecturer	Senior lecturer	Professor
Professional assistant	1	1	5	7
Lecturer	1	1	5	7
Senior lecturer	1/5	1/5	1	5
Professor	1/7	1/7	1/5	1

Syntesis with respect to: Tuition Fee Costs
Overall inconsistency = ,01

Professor 0,485
Senior Lecturer 0,280
Lecturer 0,167
Professional Assistant 0,068

From the tuition fee costs aspect professor is the best solution because he needs no investment in further schooling.
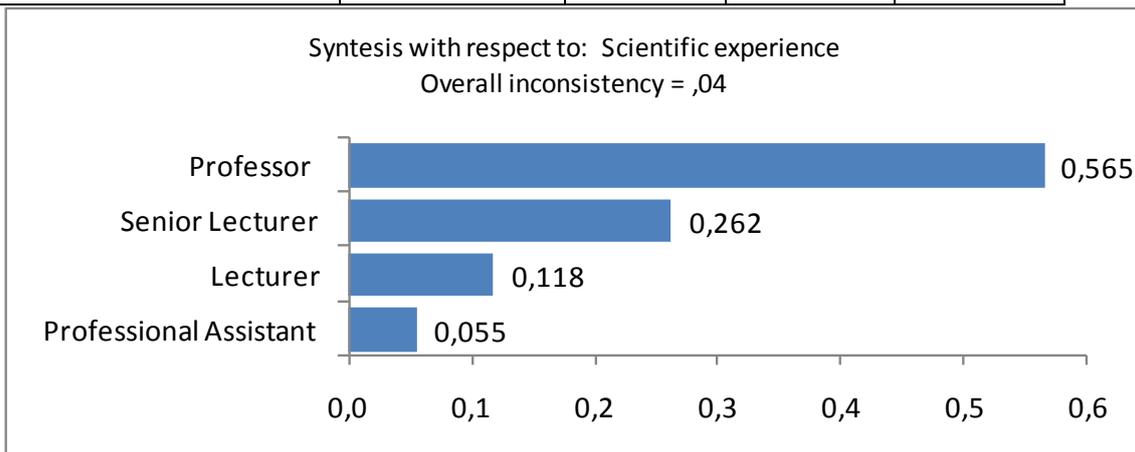
Fig 5 Synthesis by QUANTITATIVE CRITERIA

Syntesis with respect to: Quantitative criteria
Overall inconsistency = ,03

Alternative	Value
Professor	0,197
Senior Lecturer	0,171
Lecturer	0,231
Professional Assistant	0,401

The synthesis of quantitative criteria combining the total expenditures on salaries and tuition fees (Fig. 5) gives the largest priority to professional assistant, then to lecturer, to professor and finally to senior lecturer.

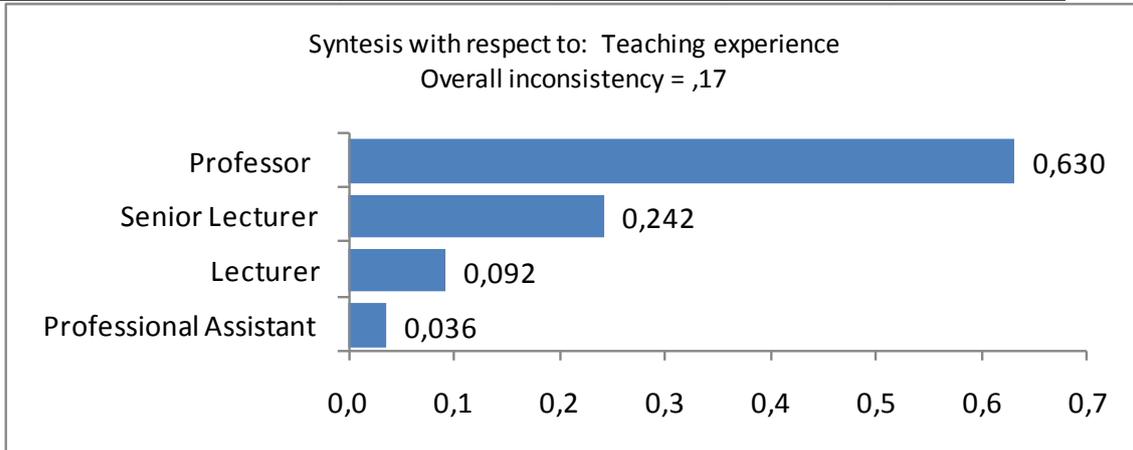**Fig 6 Alternative priorities by the SCIENTIFIC EXPERIENCE criterion**

Alternatives	Professional assistant	Lecturer	Senior lecturer	Professor
Professional assistant	1	3	6	8
Lecturer	1/3	1	5	7
Senior lecturer	1/6	1/5	1	5
Professor	1/8	1/7	1/5	1

Syntesis with respect to: Scientific experience
Overall inconsistency = ,04

Alternative	Value
Professor	0,565
Senior Lecturer	0,262
Lecturer	0,118
Professional Assistant	0,055

Professor is the most desirable alternative because he has the greatest scientific experience and professional assistant the lowest.

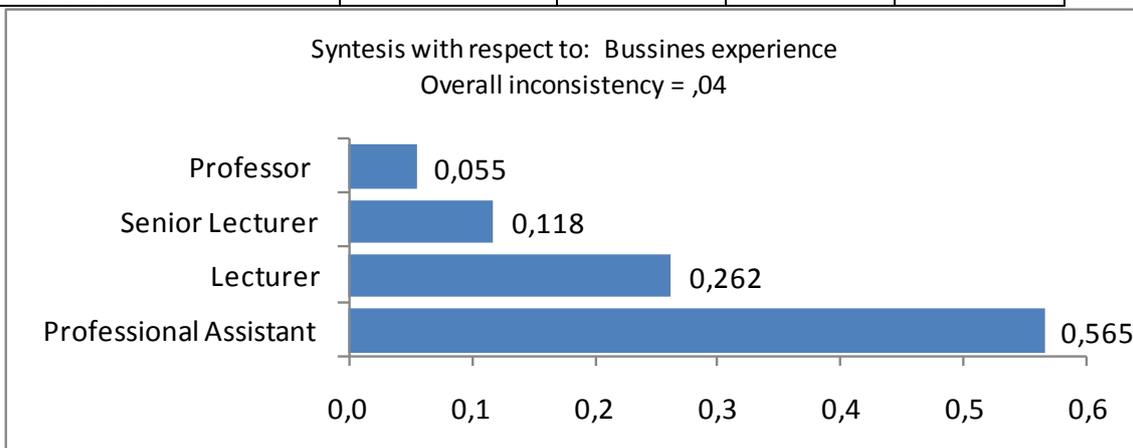**Fig 7 Alternative priorities by the TEACHING EXPERIENCE criterion**

Alternatives	Professional assistant	Lecturer	Senior lecturer	Professor
Professional assistant	1	5	7	9
Lecturer		1	5	7
Senior lecturer			1	5
Professor				1

Syntesis with respect to: Teaching experience
Overall inconsistency = ,17

Professor	0,630
Senior Lecturer	0,242
Lecturer	0,092
Professional Assistant	0,036

Professor also has the greatest teaching experience and professional assistant the lowest. But in this case overall inconsistency ratio is 0.17 which is more than acceptable limit of 0.10. It means that alternative priority ratios by comparison in pairs should be done again. We should re-examine our judgments making new ones with more consistency again and again until inconsistency rate become 0.10 or less. Another solution is to accept this judgment because the ratio does not exceed 0.20.
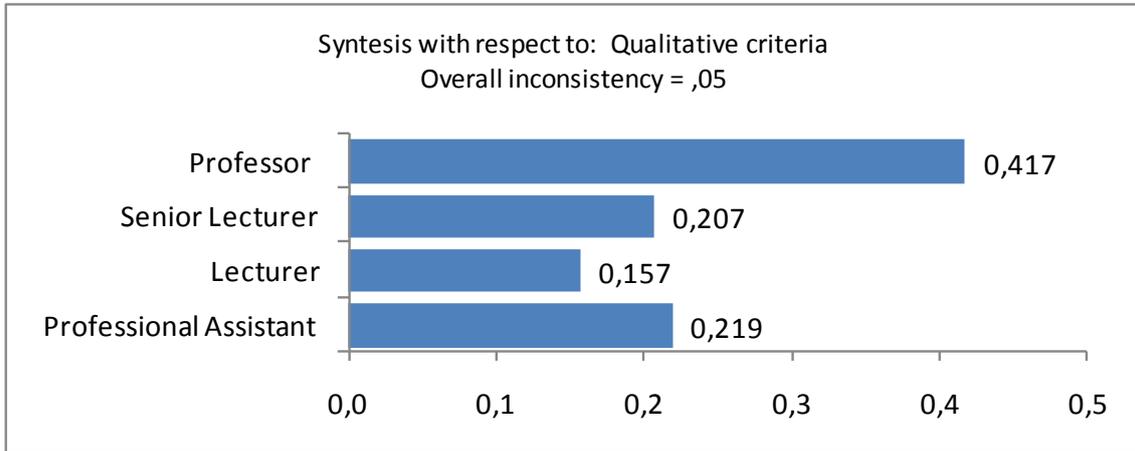
Fig 8 Alternative priorities by the PROFESSIONAL BUSSINES EXPERIENCE criterion

Alternatives	Professional assistant	Lecturer	Senior lecturer	Professor
Professional assistant	1	3	5	7
Lecturer	1/3	1	3	5
Senior lecturer	1/5	1/3	1	3
Professor	1/7	1/5	1/3	1

Syntesis with respect to: Bussines experience
Overall inconsistency = ,04

Professor	0,055
Senior Lecturer	0,118
Lecturer	0,262
Professional Assistant	0,565

By the business experience criterion, professional assistant is the most desirable because he has the greatest practical business experience and professor the least.

Fig 9 Synthesis of QUALITTATIVE CRITERIA

Syntesis with respect to: Qualitative criteria
Overall inconsistency = ,05

Professor	0,417
Senior Lecturer	0,207
Lecturer	0,157
Professional Assistant	0,219

Upon synthesizing the analysis per qualitative criteria which combines scientific, teaching and practical business experience, it might be concluded that employment priorities are granted to professor, then to professional assistant, senior lecturer and lecturer.

STEP 5 - Total priorities of a single alternative are computed by summing up its local priorities pondered with criteria weights

An overall synthesis of qualitative and quantitative criteria (Fig. 10) shows that professional assistant and professor are equally prioritized at employment opportunities. Professor has the largest teaching and scientific experience and does not require any additional tuition fee, which contributes to preferences, but also to the highest salary and the least professional business experience, which are all negative attributes for the employment at a private business school at college level. Professional assistant has the largest practical experience and the lowest salary expenditures make him the most desirable as an employee of a private business school. But he has no teaching or scientific experience and requires much of additional education to meet all other required standards. Lecturer and senior lecturer as alternatives are at the third and the fourth place, since by their attributes they are somewhere between the first two described alternatives.
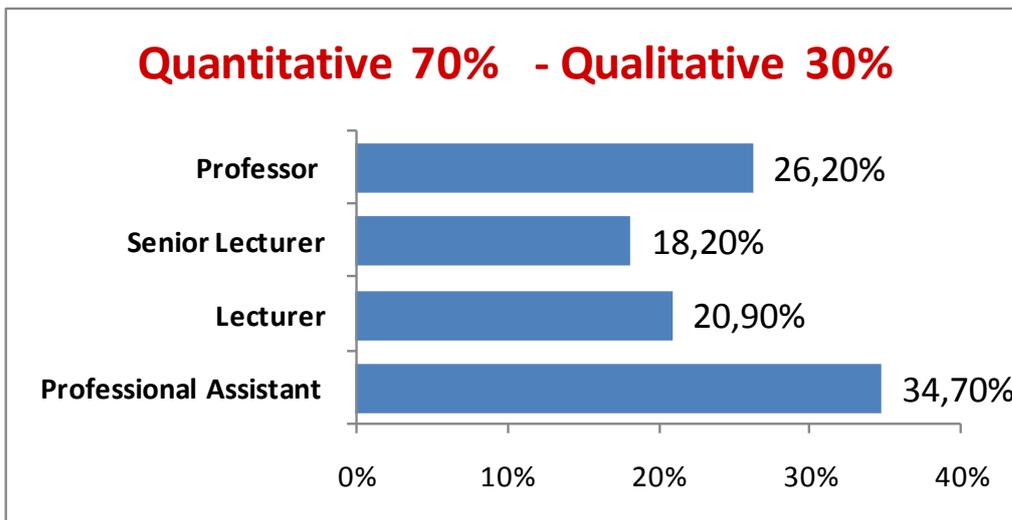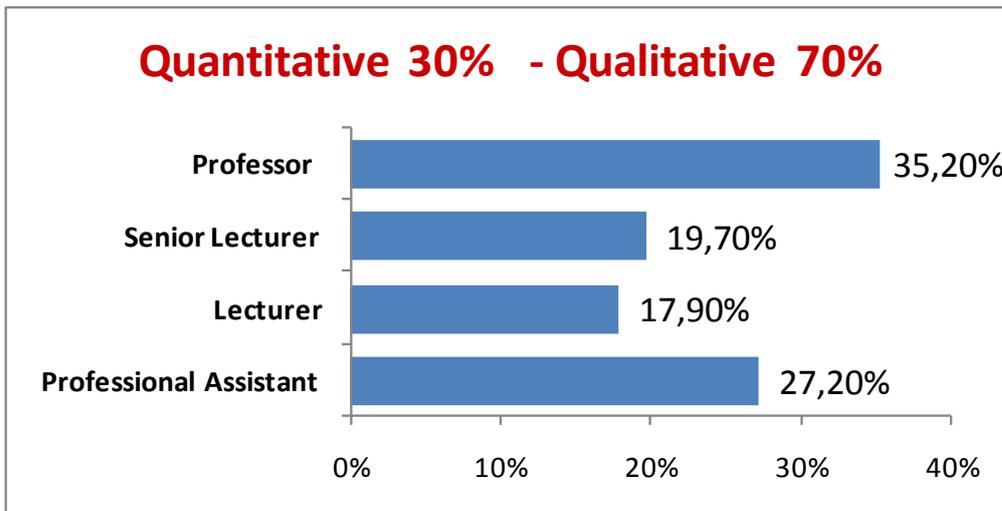
Fig. 10 Synthesis of all criteria aiming to select an optimal alternative
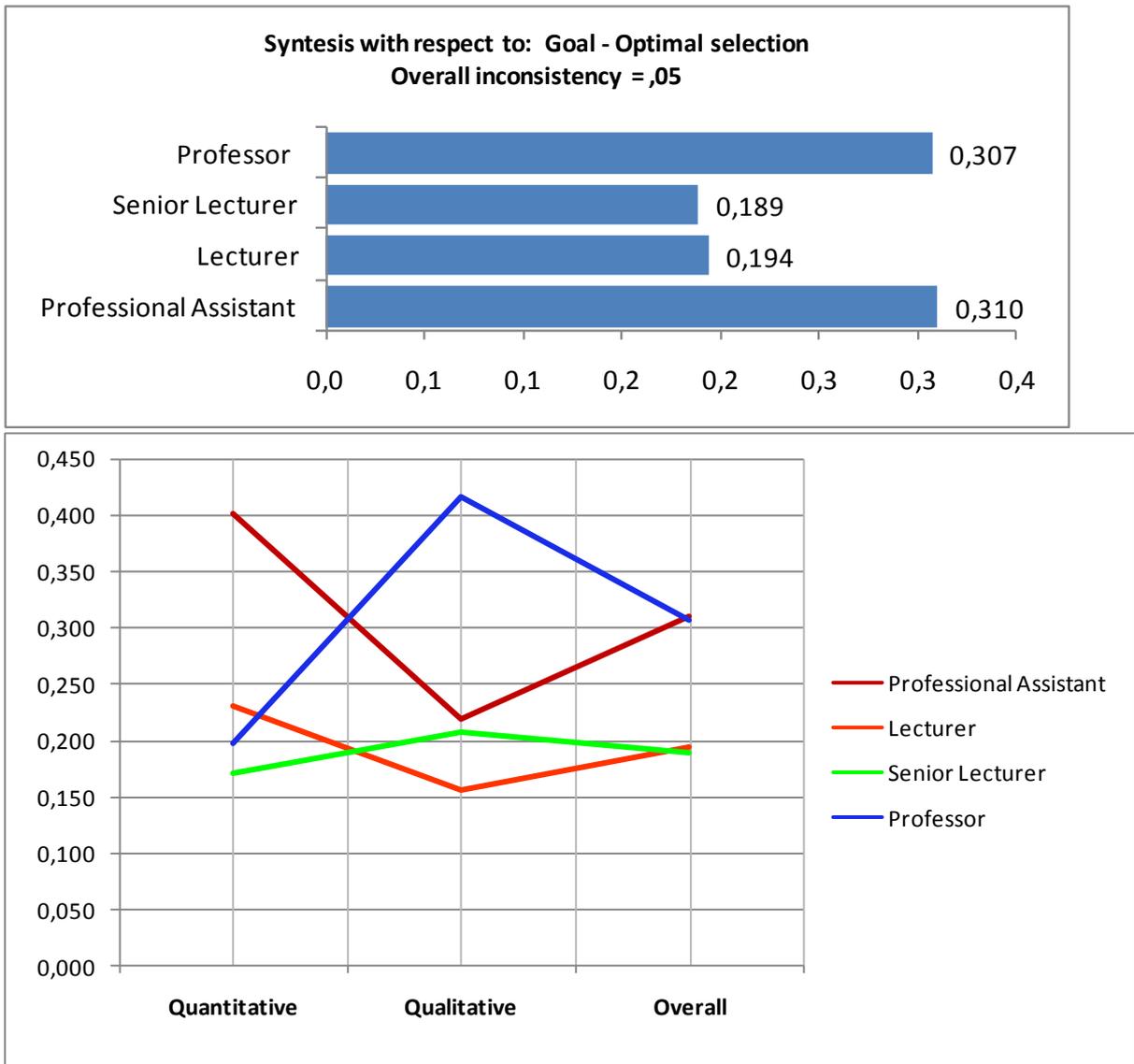
STEP 6 - Sensitivity analysis shall be performed to find out to what extent the modified input data affect total alternative priorities.

The results already obtained were founded on the judgment of equal importance of qualitative and quantitative criteria (50:50) but conclusion shell bee quite different if the importance of quantitative and qualitative criteria vary, since it directly affects the end result (Fig. 11). If larger priority is given to qualitative criteria, an alternative number one shall be professor, then professional assistant, senior lecturer and lecturer. If preference is given to quantitative criteria, priority shall be granted to professional assistant, then to professor, to lecturer and to senior lecturer.

Fig 11 Importance of quantitative and qualitative criteria for a final choice and variation impact

Quantitative 30% - Qualitative 70%

Professor	35,20%
Senior Lecturer	19,70%
Lecturer	17,90%
Professional Assistant	27,20%

Quantitative 70% - Qualitative 30%

|	
Professor	26,20%
Senior Lecturer	18,20%
Lecturer	20,90%
Professional Assistant	34,70%

The two-dimensional selection chart (Fig. 12), shows that professional assistant obtains the highest priority due to quantitative criteria, for by qualitative criteria professor has the highest preference. Senior lecturer and lecturer are both somewhere in the middle due to lower professional and scientific experience.

**Fig 12 Two-dimensional graph for selection of teachers**
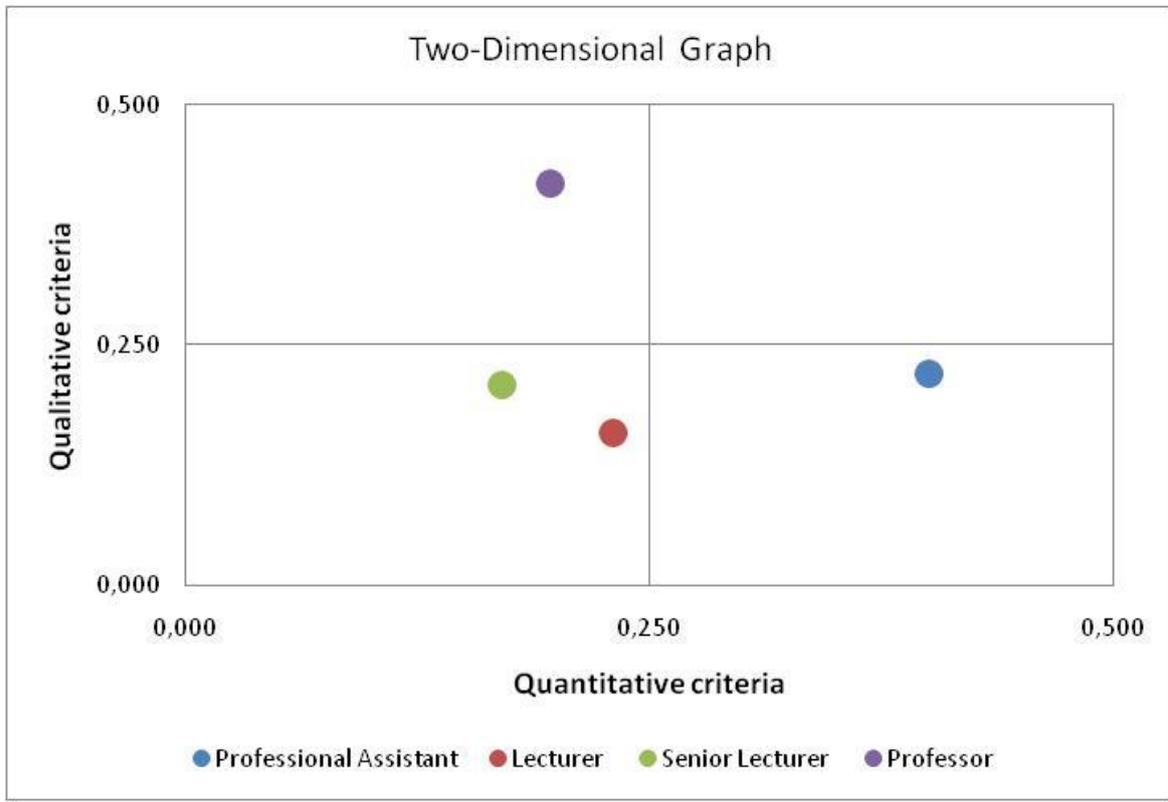
Although professor and professional assistant show very similar overall results, due to greater availability on the Croatian labor market professional assistant is chosen for further pair comparisons. By an individual comparison between professional assistant with each and every other alternative, in accordance with quantitative and qualitative criteria and by overall criteria (summarized), it may be seen that he is favored, and that this advantage is based on quantitative criteria.

**Fig 13 Comparing professional assistant and professor by criteria and overall**
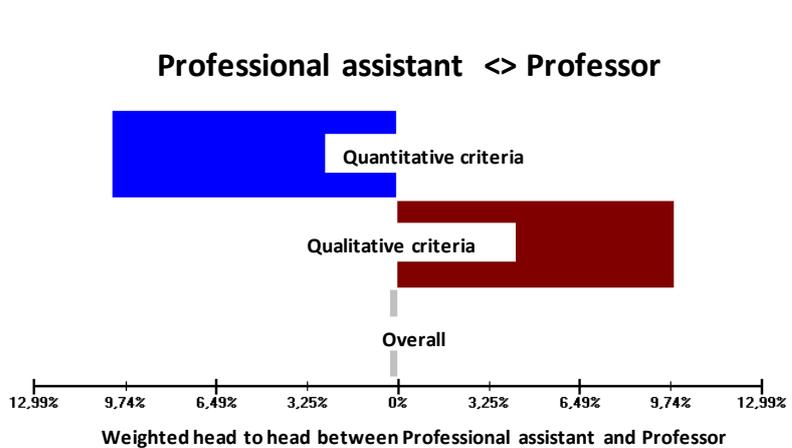
Compared to a professor, professional assistant has very small or hardly any significant advantage.

<u>Fig 14</u> Compared to a professional assistant and senior lecturer by criteria and overall
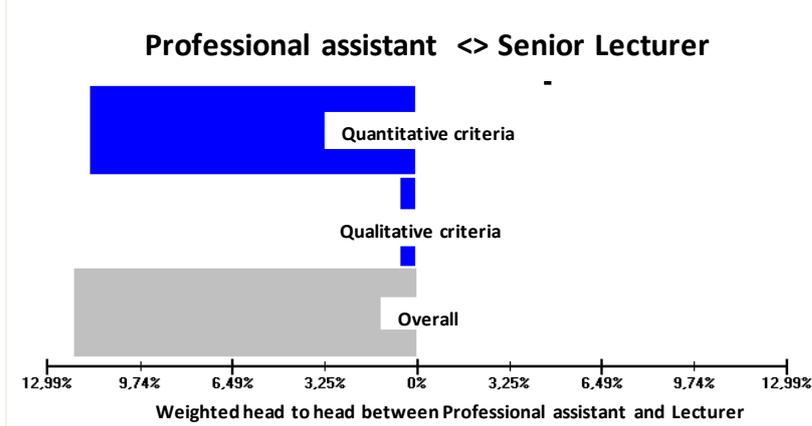
As it is clearly visible on Fig 14 and Fig 15 professional assistant has great advantage compared to lecturer and senior lecturer.

<u>Fig 15</u> Compared to a professional assistant and lecturer by criteria and overall
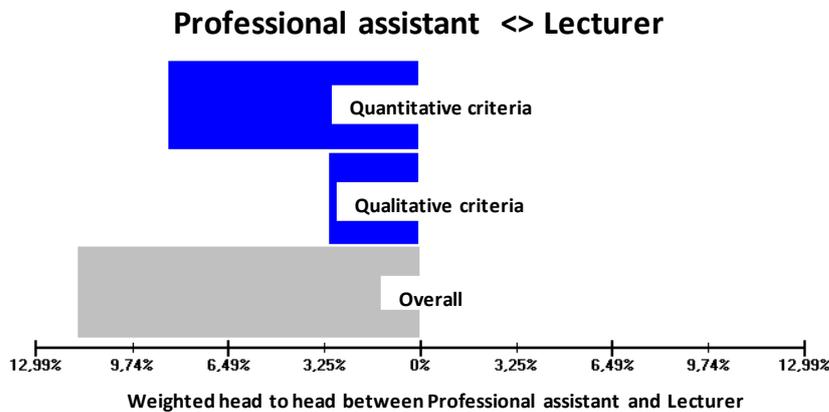
4. Conclusion

The AHP Method analysis for selection of teachers was performed by means of two main priority groups: quantitative (the costs of salaries and the school fees) and qualitative (scientific, teaching and professional business experience) criteria. Upon synthesizing the analysis per qualitative criteria it might be concluded that employment priorities are granted to professor, then to professional assistant, senior lecturer and lecturer. The synthesis of quantitative criteria only gives the largest priority to professional assistant, then to lecturer, to professor and finally to senior lecturer. An overall synthesis of qualitative and quantitative criteria shows that professional assistant and professor are equally prioritized on the first place. On the second place are lecturer and senior lecturer with very small differences between them. However the conclusion shall be different if the importance of quantitative and qualitative criteria vary, since it directly affects the end result. If larger priority is given to qualitative criteria, an alternative number one shall be professor, then professional assistant, senior lecturer and lecturer. The two-dimensional selection chart shows that professional assistant obtains the highest priority due to quantitative criteria. Senior lecturer and lecturer are both somewhere in the middle due to lower professional and scientific experience.

Although professor and professional assistant show very similar overall results, due to a greater availability on the Croatian labor market professional assistant is chosen for further pair comparisons with each and every other alternative, in accordance with quantitative and qualitative criteria and by overall criteria (summarized). It may be seen that he is favored before everyone else, and that this advantage is based on quantitative criteria. However, very often such experienced professional persons like to share their very rich and interesting business experience; yet, they are not willing to spend lots of their free time in additional education, training and research to acquire predispositions for election into higher academic rank. According to Croatian laws college teachers are obliged to an election every three years and can be reelected into the same rank only once. Therefore, hiring professional assistants is a very good solution in a start-up phase of private business school at college (undergraduate) level, especially in transition countries with a very small number of people having Master of Science degree or PhD in business. It is also good as an initial step of the business teacher's career. But for sustainable growth and development every private business school with undergraduate and graduate (diploma) levels should have a good balance between all academic ranks of teachers (similar to the BCG matrix of product developing portfolio combined with life cycle of products). Experienced professors as experts in basic and applied business research, curricula and syllabi development, teaching methods, supervising final theses etc. should act as mentors of their younger colleagues. Lecturers and senior lecturers must be majority of full time teacher staff and candidates for professors at undergraduate, graduate and postgraduate studies. Professional assistants as responsible for students' in-company training, field trips, guest speakers and as research assistants at economy-based projects should interface between business school and real business world. This well balanced portfolio of teaching staff is also necessary to meet all legal requirements, ISO standards and accreditation criteria of different international associations of recognized business schools.

The inconsistency ratios were under allowed limit in all cases except the criterion teaching experience. It means that attributes of grading teaching experience at private business schools are to be set more clearly. Namely, senior professors really have greater teaching experience but in ex cathedra and "teacher centered teaching" while younger lecturer and senior lecturer almost have better modern trainings and experience in interactive and "learner centered teaching". While senior professors have better references in curricula and sillabi development, in textbooks they had written and final theses they had supervised, younger lecturers may be better in modern teaching methods such as essays, case studies, problem solving exercises, student team projects and e-learning.

Since the role of a private sector in higher education is becoming more and more significant (so called "corporativization of universities") the human resource management in private business schools becomes very interesting area of basic and applied business research. Like in this example of selection and hiring criteria, an AHP Method and program ExpertChoice could also be used as a very practical management tool to improve decision making in all other aspects of HRM in private business schools such as: expectations, recruiting, motivation, lifelong learning, supervision, compensation, job satisfaction, commitment and loyalty, leadership, communication and corporate culture, business ethics, university-enterprise cooperation... If data could be transparent and available in the emerging battle for talents especially interesting research topics would be the comparison of HRM between public universities and private business schools, or even private universities and business schools versus private corporations.

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